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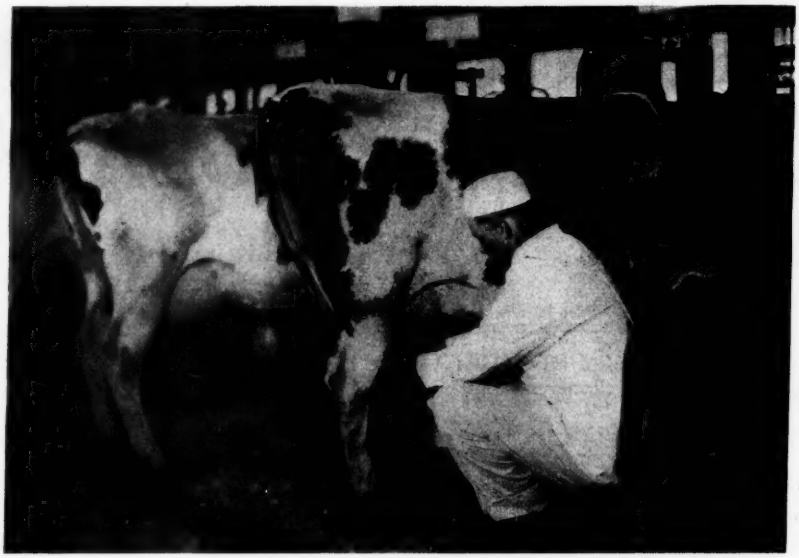

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ORIGINAL ARTICLES

THE AVOIDANCE OF RISK IN OPERATIONS*

JOHN W. KEEFE, M.D., F.A.C.S.
PROVIDENCE, R. I.

While the number of years that an individual has lived has an important bearing upon his ability to withstand an operative procedure, yet the most essential factor for the surgeon to consider is the condition or state of the various tissues of the body and their interrelations which keep the organism functioning normally.

Senility is a term used to imply mental or physical infirmities due to old age. When can a man be said to be old? Some men are old at fifty, while others may be strong and vigorous at eighty.

A man may be young in years, and yet we may find that his body tissues have so deteriorated that he may be said to be old.

The heart may be so impaired following an acute endorcarditis that the life of the individual may be definitely shortened.

If we would adequately evaluate the capacity of the individual to withstand an operation, it is necessary that we have a careful and detailed history, not only of the life of the patient, but also of his ancestors. A syphilitic or tuberculous heredity may render dangerous a simple operative procedure.

The mental state and the temperament of the patient should be carefully considered, as the emotions play an important role in our lives. We are all familiar with the beneficial effects produced by the implicit confidence of the patient in the surgeon.

It is desirable that the anaesthetist should see the patient, preferably the day before the operation, in order that he may acquaint himself with the character and condition of the patient, the disease from which he suffers, and the type of operation which is to be performed. Should he be a skillful and tactful anaesthetist, the patient will take the anaesthetic with a feeling of confidence, that he is among friends who will assiduously care for his safety. We are all familiar with the bearing these activities have in producing a calm, tranquil anæsthesia.

The tactful nurse may also make smooth the stony or rough path of the patient. The nurses, assistant surgeons and the surgeon himself should visit the patient each in turn and say something encouraging or do some act of kindness, to make the trying ordeal of an operation at least as free from anxiety as it is possible to be made.

A summary of all the information obtained by the examinations of the lungs, the heart, the nervous system, the abdominal viscera, the pelvis, the rectum, laboratory findings, X-ray data, and so forth, should be carefully considered by the surgeon before he makes his diagnosis and determines what shall be the surgical procedure, if any.

The quantity output of the automobile manufacturer which we read of in the daily prints is all very well for that business, but hardly for surgery. There are surgeons who seem desirous of performing as many operations as possible in a day; and in order to accomplish this feat, they relegate to assistants the examination of the patient, the laboratory work, and accept as final their diagnosis and advice as to the operation to be performed, and some assistants even perform a part of the operation, while the surgeon himself takes his first view of the patient as he lies anaesthetized upon the operating table. You have all seen egregious errors made by eminent surgeons operating under the conditions I have just described.

We should look upon human life as something sacred, and we believe that the surgeon who operates should be in command, and, consequently, responsible for the welfare of the patient, just as the captain of the ship is responsible for the lives of his passengers.

Is it too much to ask of the surgeon that he become acquainted with his patient before the operation, that he, too, examines the lungs, heart,

*Read before the Providence Medical Association, December 4, 1927.

abdomen, and that he, too, consults with the radiographer and examines the radiograms himself? These precautions would act as a check upon his subordinates, and would place him in a better position to form a more nearly correct diagnosis and thus to better outline the operation to be undertaken. Would not this lead to fewer errors and to the avoidance of unnecessary operations?

In the practice of surgery, the quality of the work is far more to be desired than the quantity.

What is known as surgical judgment is dependent upon very many factors. The first in importance is the character of the surgeon. Is he so bold and daring that the life of his patient is sacrificed by his boldness? Or is he so timid and vascillating that his patient dies while he is making up his mind just what to do? Does he perform unnecessary operations?

The surgeon should make a study of himself and learn just what are his limitations; so that he will not be tempted to prolong unduly an operation or to do several at one sitting, unless they can be done with safety to the patient. Many lives could be saved by dividing an operation into two or more stages.

There is too great a tendency today to tinker with the various abdominal viscera; some surgeons seem to feel that the ovary and the appendix may always be attacked with impunity; but remember, fatal results have followed these unnecessary onslaughts.

The aphorism that "A man is as old as his arteries" contains many truthful elements, as the normal circulation of the blood is a most important factor in the health of the individual.

Sclerosis of the blood vessels, by impairing the blood supply to the tissues, interferes with the capacity to function of many important organs, such as the brain, heart, kidney, liver and so forth.

Should we not consider the human body as a whole, a single entity, with a complex mechanism and as an organism, with a moving equilibrium which, when working in harmony, we call health. A departure from this delicately poised state of equilibrium results in a loss of health, or disease.

If this be so, is it not desirable that the surgeon familiarize himself with the entire mechanism of the patient who may have several organs diseased at the same time. How unnecessary to remove a carcinoma of the breast, when a radiogram would show metastases in the bones of the pelvis?

We are living in an era in medicine when the specialists bid fair to outnumber the general practitioners whose labors consist in considering man as a whole, a single entity.

Many of our specialists today have become so by the short route, say a six weeks post-graduate course in some specialty. Just consider for a moment the character of the work their patients receive.

We all realize that specialization restricts a man's outlook and tends to focus his attention on the particular part of the body which comes within the range of his specialty.

A specialist who takes up the intensive study of some organ of the body, after he has practiced medicine for several years, comes to his work with a mature mind, and it is these men who in the past have advanced our knowledge of the various specialties.

Every specialist should first study his patient as he would if he were a general practitioner and then employ all of the skill which he has acquired in his specialty.

Patients with valvular disease of the heart, where there is no decompensation, withstand operations well. I believe that ether properly administered acts as a stimulant rather than a depressant. An intermittent pulse may be found for years with some persons and it is not a contraindication for operation. Rest in bed, with suitable doses of digitalis, may be of decided value and may place the patient in a condition to withstand even a severe operation.

A patient suffering from diabetes may be greatly improved by a proper diet and the administration of insulin.

Many patients suffering from complications arising from a diseased prostate, with the aid of rest in bed, forced fluids and digitalis, may be so improved as to withstand a suprapubic operation with a local anaesthetic. It is remarkable how rapidly some of these patients improve, so that they bear well the later operation for the removal of the prostate.

The interval between these two operations may be prolonged with profit to the patient for a week or even months. One is surprised to see the reduction in the size of the prostate by adequate drainage of the urinary bladder. Attention to the diet and to the gastro-intestinal tract, in one who

has neglected these important functions will materially increase the resistance of the patient.

I would emphasize the desirability of devoting more time to the preliminary study of our patients and by applying many of the known methods for improving their physical condition, render an operation safer and thus insure a more speedy and uncomplicated recovery.

Local anaesthesia should be more frequently employed than is the practice today. Many operations can be performed with greater safety and less disturbance than with a general anaesthetic.

The danger of leaving foreign bodies, usually gauze sponges or instruments, in the cavities of the body is ever present and often proves to be of great annoyance and worry to the surgeon. There are over three hundred and twenty-five cases reported of foreign bodies left in the abdominal cavity following operations, and many sponges must have been left without the surgeon ever realizing his error. Also many known instances have not been reported. An analysis of these shows that the surgeon was under some special stress, usually due to the patient having had a severe hemorrhage. While operating under great tension sponges may be easily overlooked by the surgeon.

I had a personal experience many years ago that made a profound impression upon me. We had been so imbued with the possibility of leaving a sponge in the abdominal cavity, that we made the following plans to avoid this accident. Gauze sponges of three different sizes, twelve of each, were placed in packages. At this time we had an unusually intelligent and reliable Sister in charge of the operating room. I had asked her to take entire responsibility for the sponges, during the operation, and to inform us at the close whether any sponges were missing. She was requested to do nothing else about the operating room in order that she might keep her mind solely occupied with the sponges.

Having taken these precautions, we felt at ease about the sponge question, especially on account of the remarkably alert and conscientious Sister. I had removed a small ovarian cyst and just before closing the abdominal wound, I asked for the sponge count. The Sister assured me that they were all accounted for. When the wound was half closed by suture, the anaesthetist allowed the patient to come partially out from under the influence of the anaesthetic. A portion of the ileum protruded through the wound, this was replaced, and a square gauze sponge six inches by six was asked for and placed beneath the wound and over the intestine to hold the same in place. I continued to close the wound, with the intention of recovering the sponge, before the incision was entirely closed. Yet I continued to suture the wound, leaving the sponge in the abdominal cavity. I did not again call for the sponge count, and neither the Sister responsible for the sponges, the two physicians who assisted me at the operation, nor I thought of that sponge. The sponge count having been previously asked for and found correct evidently had made a deep impression upon each one of us. So much so that we forgot to ask for a second count.

Upon visiting the patient the next day, I noticed the temperature and pulse were slightly above normal, more particularly the pulse. The Sister who took care of the abdominal cases was especially efficient and she also had been present at the operation. I said, "The patient does not look well," which at that period was unusual following that type of operation.

I then recalled in detail the various steps of the operation, even to placing that last sponge in the abdominal cavity, and I then realized that I had not removed it. I sent for the Sister who had the care of the sponges and told her the patient upon whom we had operated the day before was not doing well, and asked her if she could think of any reason why. The Sister said, "Didn't you leave that last sponge in the abdominal cavity?" I then said, "That is exactly what I did." I telephoned Dr. William R. McGuirk, who had assisted me, and said to him, "That patient we operated upon yesterday is not doing well," and asked him what he thought was the cause. He said, "Didn't you leave that last sponge in the abdominal cavity?"

It was a remarkable psychic phenomenon that each of us upon reflection was immediately able to recall the picture of that sponge placed in the abdominal cavity and not removed. I requested Dr. McGuirk to come at once to the hospital. The patient was anaesthetized, the wound opened, and the sponge lying just beneath the wound was removed. I was much impressed with the fact that I found considerable lymph upon the coils of the ileum and the parietal peritoneum, in the vicinity of the wound, showing that the sterile sponge had pro-

duced sufficient irritation to cause peritonitis, thus convincing me that gauze sponges traumatize the peritoneum, and I believe, in some instances, may cause the death of the patient. The wound was closed and I am happy to relate that the patient made a good recovery.

This instance occurred more than twenty years ago and since then I have operated without relying upon anyone to make a sponge count. Instead of using a gauze sponge to wall off the abdominal viscera, I have used a roll of sheet rubber, twelve feet long and eight inches wide, about the thickness of the sheet rubber used by dentists. When the abdominal cavity is opened folds of this rubber are tucked in the wound, walling off the intestine from the site of the operative field. A part of the rubber roll lies outside of the abdominal cavity as the entire roll is never placed wholly within the abdomen. The edges of the wound may be covered by part of the rubber roll, thus protecting them from infection and trauma from the use of retractors.

It is of equal service whether we are operating in the pelvis, on the uterus, tubes or ovaries, or whether we are excising a gall bladder or doing a gastroenterostomy.

The work of Henderson and other observers has shown us that rubber is less irritating to the intestine than gauze. I believe the use of the rubber roll to protect the intestine undoubtedly lessens the shock attending an operation, and I am convinced that we have fewer adhesions following an operation.

The ease of sterilization of the rubber roll is important. We can as readily sterilize this roll as we can our rubber gloves, and the same roll can be used many times. I have known them to last for more than a year. After an operation, the rubber is washed and while unrolled it is boiled for twenty minutes. It is then dried, powdered, and rolled into a bandage. Previous to operating it is again unrolled and then sterilized by boiling for twenty minutes. It is then rolled and placed in a hot saline solution.

A towel is folded so as to make a pocket, into which the roll of rubber is placed, and the pocket is then clamped to the sterile operating sheet near the wound. During the operation as much or as little of this rubber roll can be unwound, walling off the intestine and thus protecting the operative field.

Gauze sponges eighteen inches long and three inches wide made of several thicknesses of gauze are used to wipe dry the field of operation. These sponges, however, are never allowed to remain wholly within the abdominal cavity.

It will be noted that few sponges are needed in any operation when the rubber roll is used, and that it is no longer necessary for us to place sponges entirely within the abdominal cavity. The use of the rubber roll prevents the loss of the carbon dioxide content of the blood, and thereby lessens shock. It is moist and smooth and does not injure the peritoneum, thus preventing post-operative adhesions.

When gauze is employed to wall off the abdominal viscera, the friction that results from the gauze rubbing against the intestine, with every inspiration and consequent motion of the diaphragm, must of necessity injure the delicate peritoneal covering of the bowel and produces a continuous flow of irritating impulses, conducted through afferent nerves to the brain. There can be no question that this trauma is a factor in the production of shock and the cause of peritonitis.

The advantages of the use of the rubber roll for walling off purposes are well borne out by the valuable experimental studies of Yandell Henderson of Yale dealing with the carbon dioxide content of the blood and its relations to shock.

His experiments and deductions are of great practical value to us as surgeons. He states "that from excessive pulmonary ventilation, reflexly induced by laying open the abdomen, or indeed, by any surgical operation, there results a diminution of the carbon dioxide content of the arterial blood." This is known as acapnia.

When the viscera are exposed to the air, exhalation of carbon dioxide occurs, and the local acapnia which results is a factor in the peripheral inhibition.

General acapnia from the hypernea and local acapnia from exposure are the initial causes of surgical shock following laparotomy.

Cloths moistened in warm saline solution and frequently changed produce local acapnia. When acapnia is prevented the forms of motility of the gastrointestinal canal are practically identical with those shown by roentgenograms of unoperated animals.

He caused to pass over the exposed viscera a gentle current of normal moist air, and found that

this treatment is a highly effective procedure in the production of shock.

In another experiment one loop of intestine was laid in cotton wool and left untouched by the hand during twenty minutes of warm moist aeration, while a control loop was wrapped in sheet rubber to protect it from the air, and was handled continuously for this period. Both became congested, but the former underwent by far the greater loss of tonus and motility. The carbon dioxide content of the animal's blood was then increased, and the exposed loop recovered its tonus and motility.

He thus demonstrates the value of sheet rubber as a covering for the intestines during operations, as it reduces acapnia and lessens shock.

Crile says that "When the omentum is made to cover the viscera there is much less shock." When the abdomen is opened peristalsis ceases.

Henderson found that aeration of the viscera of a bulldog for three hours lowered the arterial pressure 50%. The small intestines changed color from pink to dark purple; then 200 cc. of Ringer's solution were slowly injected into the femoral vein.

This fluid while cold had been shaken thoroughly in a flask, through which carbon dioxide was bubbled, and then had been warmed to 35 C.

Ringer's solution saturated with carbon dioxide was introduced into the peritoneal cavity and a stream of carbon dioxide gas was bubbled through this liquid from a tube inserted deep among the viscera.

At the end of twenty minutes the animal had come out of coma, arterial pressure had risen considerably and the pulse was of nearly normal appearance and tonus.

Local acpania due to direct exhalation of carbon dioxide is a factor in the loss of tonus in exposed viscera. Exposing the viscera to a current of air at body temperature saturated with moisture rapidly induces congestion and loss of tonus and motility.

Restoration of the body's store of carbon dioxide is effective as a method of relief from all except the extreme stages of acapnia shock.

If the conclusions of Henderson are correct, we should no longer cover the exposed intestine with warm moist towels or gauze. Sheet rubber is far preferable. Should it be found necessary temporarily to remove loops of intestine from the abdomen, a rubber bag may be fastened to the sterile sheet near the wound, and the intestines placed in this bag.

Many surgeons located in different parts of the country have written and spoken to me of the value of the rubber roll in their practice of surgery.

Dr. William T. Porter of Harvard, whose heroism in making a study of shock in the shell-torn districts of France calls forth our profound admiration, has also proved that increasing the carbon dioxide content of the blood of wounded soldiers in a state of shock results in a gradual return to normal. The application of this principle will undoubtedly be the means of saving many lives.

Having used the rubber roll for more than twenty years, I am convinced that it lessens shock, fewer adhesions form, and it lessens the danger of leaving sponges in the abdominal cavity.

Conclusions.

Local anaesthesia should be employed when possible, especially when operating upon the aged.

Age alone adds little to the risk of an operation.

Diseased tissues may contraindicate operation.

Impairment of organs or tissues may be improved by a suitable study of the conditions and the intelligent application of drugs and hygienic measures.

The rubber roll in place of gauze sponges for walling off the abdominal viscera.

A greater length of time than is customary should be devoted to the study of the patient before the operation.

Let us by all means avoid operations on the old or infirm unless they are life saving.

Life is sacred. Remember the Golden Rule.

SHELLFISH SANITATION*

By L. M. Fisher
sanitary engineer
U. S. Public Health Service

Importance of Shellfish as a Food

There is evidence that from the earliest times shellfish have been an important source of food for primitive man. Breasted[1] described the shell

*Read before the New England Health Institute held in Providence, R. I., September 27 to 30, 1927.

mounds of prehistoric Denmark, and finds evidence that man in the late stone age drew much of his sustenance from the sea. In these shell mounds, which extend for miles along the sand dunes, are found intermingled shells, animal bones, evidences of camp fires and stone tools and implements.

In America, similar mounds are found up and down the Atlantic coast, though perhaps not of as great antiquity. Some weeks ago the writer casually examined some very extensive mounds along the banks of the Sheepscott River in Maine. Some of the mounds are fifty feet high and covered with trees. They occur at intervals on both sides of the river for a distance of a half mile or more. It is reported[2] that bones of animals and stone implements and tools have been found there. According to local tradition, human remains have been taken from these shell mounds. One authority[2] reports the finding of human bones in similar mounds in Massachusetts.

Shellfish have played an important part as food in New England from the earliest times. It is recorded[3] that in that first severe winter the Pilgrims spent at Plymouth there were times when there was nothing to eat but shellfish. Elder Brewster, when he sat down to such a meal, returned thanks that they "were permitted to suck of the abundance of the seas and of the treasures hid in the sands."

To this day shellfish are much esteemed in New England. At many resort places along the coast they furnish the chief attraction to vacationists. At one such place in Rhode Island alone it is not unusual in a single day for 3,000 to 5,000 persons to partake of shore dinners containing shellfish in generous portions. Many of these folk come from points outside the State, and even from outside New England.

Elsewhere a similar fondness for shellfish exists. People living in interior cities from the Atlantic coast to the Pacific, and even in foreign countries, enjoy American shellfish, shipped to them either shucked or in the shell. A product so extensively used affords an opportunity for gaining a livelihood to thousands of people. According to the Bureau of Fisheries,[4] the number of people employed in the oyster industry in the United States is about 67,000, and the value of the product is over $14,000,000 annually. In quantity, it amounts to 73,000 tons of food, an equivalent to 254,000 dressed steers, and supply 300,000,000 meals each year.

Shellfish are rich in iodine and in vitamines.[5] One pound of oysters will furnish 7 per cent. of the energy a man needs daily, 28 per cent. of the protein, 35 per cent. of the calcium, 53 per cent. of the phosphorus, and 13.6 per cent. of the iron. Their composition is such as to make them more nearly self sufficient as a diet than most foods. In this respect they resemble milk, and need but the ordinary ingredients used in cooking starches and fats to give them "balance." Jones[6] states that they contain 200 times as much iron as eggs, and are rich in vitamines A, B and C. This suggests the possibility of use in the prevention of dietary deficiency diseases.

Biology and Life History

This discussion refers principally to oysters, quahaugs or hard clams, and soft clams, since efforts at sanitation are directed principally toward these forms. Oysters and clams belong to the group Lamellibranchae of the mollusk sub-kingdom. They possess a pair of valves or shells composed principally of lime. Their methods of obtaining food and their reproductory processes are somewhat similar in all three species, and are of much interest and importance to the sanitarian and the culturist.

Possessing very limited powers of locomotion, or possessing such powers only during a portion of their lives, they cannot go in search of food, but must depend chiefly upon currents of water to bring it to them. Their[7] food consists largely of microscopic forms of plant and animal life. Small crustaceans, larvae of mollusks and crustaceans, protozoa, rotifers, bacteria, etc., constitute a part of the food supply. Other things being equal, shellfish will thrive better on beds swept by strong tidal currents than they will in areas of quiet water. Shallow bays and coves of salt water receiving the discharge from fresh water streams, carrying quantities of organic life forms, are more desirable to the oyster culturist than areas exposed to the open ocean, where currents are slow, and into which no fresh water streams discharge. The nature of the bottom, whether hard and clean or muddy and soft, or of shifting sand, also has an important bearing on the desirability of a given area. The growth of shellfish depends upon temperature very largely, also, more growth occurring

in the warm summer seasons than in the winter time. The life processes are slowed up to such an extent in some forms in cold weather as to resemble a state of hibernation. In the active feeding season, according to Golstoff,[8] an average oyster will strain the food from 40 to 50 liters of water a day, and will feed during 20 of the 24 hours. In cold weather the oyster may remain inactive for days at a time. Quahaugs and soft shelled clams are said to burrow into the mud and sand during cold weather to escape low temperatures.

Reproduction

The American oyster (Ostrea Virginica) is[7] unisexual, whereas the European oyster (Ostrea Edulis) is hermaphroditic, i. e., both sexes occur in the same animal. Some hermaphroditic species are also reported on the Atlantic coast.[9]

The eggs are ejected by the female into the water, where they are fertilized by the spermatozoa similarly ejected by the male. The resulting larvae, microscopic in size, possess the ability to swim about. After a week or ten days, the larva "strikes" or "sets," and for the rest of its life it remains sedentary. Oysters remain attached to the object on which they "set," e. g., shell, rock, piles, or other hard objects, unless forcibly removed. Clams, both hard and soft, burrow into the mud or sand near where they "set," and remain within a few feet of the spot thereafter.

Culture

The cultivation of oysters has been practiced for many years. It is perhaps most highly developed in France. With the exhaustion of the natural beds, attempts at cultivation began. In America, natural beds occurred all along the Atlantic coast from Maine to Texas. At present, there is none of commercial importance north of Cape Cod. Inability to obtain an abundant natural "set" is the continuous concern of oyster growers. Most of the oysters marketed from New England probably have their beginning as seed oysters in Connecticut. It has been over ten years since a satisfactory natural "set" has occurred in Narragansett Bay.

The ground on which seed oysters are to be raised is first carefully cleaned. Large mature oysters known as "spawners" are placed on or near the bed to provide the "spat." About the time of spawning, clean shells, gravel or other materials are scattered over the beds to provide a place on which the young free swimming larvæ can "strike" or "set." After the set is obtained, it may be necessary to protect it from destruction by shifting sands, storms or other contingencies to remove it to growing or maturing grounds. There are certain critical temperatures below which spawning and setting apparently do not readily occur. For New England waters, this temperature is approximately 70 degrees.[7] Since the water attains this temperature for only a short period during the summer, the spawning season necessarily is very short. When the summer is unusually cold, as the past one has been, a set can be expected only in the most favorable places. Seed oysters transplanted to other areas remain down varying lengths of time before being marketed. In some instances, two-year old seed may be laid down in a different body of water for a period of two or three years to acquire the necessary growth and flavor desirable. In other instances, this period of time may be shortened to a few weeks or months. During this time it may be necessary to fight the natural enemies of the oyster, such as star fish and drills, often at considerable expense. The grower may also have to employ watchmen and patrols to keep poachers off the beds.

In stormy, wintry weather, it may not be possible to take oysters from the maturing grounds at times when the demand for them arises. To meet this situation, oysters, quahaugs and clams, at the beginning of the season, are sometimes removed to more accessible and better protected beds, or even into floats near shore. Until recently it was the custom in some sections of the country to "plump" or "fatten" oysters by taking advantage of the phenomenon of osmosis. If shellfish grown in waters of the approximate salinity of sea water are laid down in water having a lower salt content, such as fresh water, osmosis takes place, the fresh water penetrating the tissues of the shellfish, and so diluting the shellfish with water. As much as twenty to thirty per cent. of water can be added in this way. If it happens, however, that the fresh water is contaminated with sewage, as so often is the case along the water front near towns and cities, disaster may follow.

The storage of oysters under water after they have been removed from their growing beds is

regarded by some growers who ship oysters in the shell exclusively, as a conditioning process essential to develop their maximum keeping qualities. In this conditioning process, the shellfish are placed in water of the same salt content as that over the growing beds, so that plumping or bloating does not occur. Many are placed in a comparatively small quantity of water in concrete tanks. The oysters feed actively, and probably use up promptly what little food is in the water. They continue to "drink," and thus flush out of the intestinal tract accumulated waste material which might otherwise become a focus of infection resulting in the early disintegration of the bivalve. It is said that the oyster meats actually lose five to ten per cent. in weight during this process, but that they stand shipment for long distances much better.

In order to prevent contamination during this conditioning process, it is necessary that the water used be of a high bacterial quality, practically of drinking water standard. This is accomplished in some cases by treating the water admitted to the tanks with chlorine.

Marketing

In most States, the oyster season coincides with the colder months of the year. It so happens that the names of these months contain the letter "R." In this way the average man remembers when he can eat oysters. The difficulties of shipping during the warmer months, and also the fact that the oysters are spawning then, have contributed to maintaining a "season" for oysters. In some States the season is fixed by law, in others merely by custom.

Shellfish are marketed either in the shell or shucked, and in either condition are shipped long distances. Shell oysters are kept alive until consumed. This is accomplished by keeping them on ice or at low temperatures. Shucked oysters are likewise kept from spoiling by shipping them at low temperatures. The shucked shellfish are washed to free them from grit, pieces of shell, mud, etc. In modern shucking houses this is accomplished in a machine known as a "blower," in which air is blown up through the mass of shellfish and water contained in a metal tank, thus agitating the contents sufficiently to remove the undesirable matter, e. g., shells, mud, sand, mucus, etc. Osmosis takes place rapidly during this process, and if the washing is continued too long, a considerable quantity of water may be added to the product.

Care must be taken that only normal, healthy persons are employed in shucking houses, since they are engaged in handling a food product that is often consumed raw, and the utmost cleanliness should be enforced. Carriers of typhoid fever and other intestinal diseases should be excluded. The spread of disease has been ascribed to infection introduced in this way.[10]

In one New England State[11] where the routine examination of shuckers involves the examination of stools and urine to discover typhoid fever, nearly two per cent. of those examined had to be excluded from the handling of shellfish because the examinations disclosed the presence of typhoid fever organisms in their body discharges.

The container in which the shucked product is shipped should be plainly labeled with an identification number, and it should be effectively sealed so that tempering can be easily detected, in order that both the purchaser and shipper may be protected, and the responsibility for the presence of an unsatisfactory product on the market may be readily fixed.

Pollution

From time immemorial, cities and towns located on the sea or near it or on large bodies of fresh water have disposed of their liquid wastes by methods of dilution, and, on the whole, the method has been reasonably satisfactory, particularly from the standpoint of the city so disposing of its wastes. Sooner or later, however, particularly if the city grows, trouble arises. The pollution may become a nuisance along the water front, so that the property owners and the shipping interests protest. It may prevent the use of adjacent bathing beaches; its unsightliness may offend the æsthetic sense of the citizens; it may contaminate the city's own water supply, or that of nearby cities, as has happened in the case of some of our cities on the Great Lakes; and, which is more to the point in this connection, it may interfere with the culture of shellfish and become a method by which disease may be spread among shellfish consumers.

While the various factors which have operated to prevent the recurrence of a natural set in former good shellfish areas are not well understood,

it is generally believed that the increasing pollution of our streams, both with domestic sewage and trade wastes, has contributed largely to the disappearance of the industry in certain localities. Some growing areas have become so badly polluted with sewage that the decomposing organic matter has utilized all the dissolved oxygen in the water, leaving none to support shellfish life.[12] The presence of dilute acids or other chemical substances from various industrial processes may have an inimical effect, if not upon the adult shellfish themselves, at least upon the tender larvae in the veligre stage which occurs about 36 hours after the fertilization of the egg.

The sanitary significance of pollution is, however, of greater interest to those charged with protecting and conserving the public health than is the biological significance.

Various investigators[13] have shown that the common sewage microorganisms, as represented by the B. coli group, are not normally present in the intestinal tracts nor in the shell liquor of the shellfish grown in uncontaminated waters. Therefore, much the same methods are employed to test the safety of shellfish as are employed in testing the safety of drinking water. The procedure[14] recommended by a committee appointed by the American Public Health Association to formulate a standard method for examining shellfish is generally followed in the various laboratories that examine shellfish.

Since absolutely uncontamined water is not to be found near our coasts, much time and effort is devoted to ascertaining the degree of contamination that occurs over the various shellfish beds at various times, as influenced by conditions of tide, current and wind. The length of time that it takes for pollution to reach the growing area is also taken into consideration, since recent pollution is more dangerous than old pollution. This is so because disease producing organisms in water, whether fresh or salt, are not in their natural habitat, and, fortunately, do not multiply and increase, but, on the other hand, die out completely with the elapse of sufficient time. If it were not for this self purification process which nature has provided, death rates from water borne diseases would very materially exceed those of the present time.

In addition to this, there would be very few safe shellfish growing areas within a reasonable distance of our markets. On the other hand, it must not be assumed that, merely because slowly moving water tends to purify itself, the danger can be completely ignored. There is a very real and somewhat insidious danger. Studies of tides and currents, quantities of sewage and quantities of diluting water and numerous bacteriological examinations of water and shellfish need to be made in order that even an approximate appraisal of the relative degree of danger may be obtained.

Relaying

Shellfish that have become contaminated on their natural growing grounds with sewage laden waters need not necessarily become a total loss to the oyster grower. It has been shown[15] that if such shellfish are relaid to clean waters, they will, in the course of a relatively short time during their active feeding season, cleanse themselves of the pollution they have accumulated. This fact is of considerable importance to the industry. When the expense of relaying to clean waters is not excessive, and it frequently is not, shellfish which would otherwise have to be condemned can be reclaimed. This applies particularly to oysters. This procedure appears to be less valuable in the case of both hard and soft clams, principally, perhaps, because of the fact that both varieties of clams burrow into the mud and sand. Less experimentation appears to have been made with clams than with oysters, because they are less extensively used. In some attempts at relaying soft clams, considerable mortality resulted because of breakage in handling. Then, too, the same degree of purification did not appear to take place.[16] In some instances the relayed clams did not burrow into the sand, and many died. It would be of great economic value to New England if a practicable method of reclaiming soft clams from polluted areas could be perfected. At the same time, it would simplify policing of closed areas in which shellfish soon become abundant. The Legislature of Massachusetts last year appropriated a sum of money to conduct experiments along these lines, and the Massachusetts State Health Department is now engaged in carrying out such studies. Some prolific hard clam growing areas in New England have also had to be closed because of sewage pollution. If a practicable method of reclaiming them could be discovered, it would be a boon to some sections of the coast at least.

The leaders in the industry would do well to see that funds for the necessary studies and investigations are provided. Some changes in State law would have to be made to permit the relaying of hard clams from closed areas, and it would no doubt be found necessary to lease suitable grounds to individuals to provide the necessary incentive. It has been found profitable to relay hard clams of the "little neck" size, or smaller, to areas where two or more years of growth can be added. The increase in bulk in this time is said to amount to four or five fold. It is reported that undersized hard clams surreptitiously shipped to the New York market from one of the New England States were bought by one of the Long Island shellfish dealers, relaid in Long Island waters, and after three or four years, marketed at a handsome profit.

Water Storage and Chlorination

Because of the dangers attendant upon the floating of oysters in small creeks or in cribs and floats near shore, the practice is prohibited in most states now. Some shippers, particularly on Long Island, who have desired to have a quantity of shellfish on hand for immediate shipment, have lately begun to store oysters in specially constructed concrete tanks ashore. Water from the Sound is pumped into the tanks and chlorinated so as to bring it up to the drinking water standard. The New York State Health Department regulations require that oysters stored under water or floated shall be stored or floated only in water of drinking water standard. After several hours, the water is drawn off and the tank refilled with more chlorinated water. The oysters "drink" quite actively, and a change in water is necessary to keep them in proper condition.

At various times attempts have meen made in the laboratory to chlorinate contaminated oysters, and thus make them suitable for market purposes. Essentially, this is merely a modification of the relaying process employed in the case of oysters grown in contaminated areas and relayed to clean waters where they can purify themselves. Oysters will not actively drink water containing much free chlorine. The chlorine appears to be an irritant to the oyster, which closes up and does not drink any more than necessary to satisfy its oxygen requirements. Some recent studies, made this past summer by observers under the direction of Dr. Galstoff of the Bureau of Fisheries at Woods Hole, seem to indicate that after several weeks the oysters develop a tolerance for free chlorine to which they would not accommodate themselves at first.

The chlorination of oysters seems to hold some possibilities of usefulness to the industry. Whether it will ever be advisable to permit oysters from grossly polluted areas to be processed by means of chlorine so that they may be marketed is, at present, doubtful. Such a procedure could be compared to the pasteurization of dirty milk, a practice discouraged by all sanitarians. If it can be applied to oysters from only moderately polluted areas, it will, nevertheless, call for very close supervision by health authorities and careful control of every step by laboratory procedure.

Shellfish and Disease

Many of the States now have well organized health departments in which competent epidemiologists are found. The same statement is true of many of our larger cities. So that whenever a considerable number of cases of typhoid fever occur, the cause of most of them is reasonable certain to be located. When only a small number of cases occur, or when they are widely scattered throughout the country, it becomes much more difficult to fix the responsibility for the occurrence of the disease.

At various times in the past, both in this country and abroad, there have been "scares" about the safety of shellfish as a food supply. At such times the consumption of shellfish has fallen off greatly. At times the public so completely lost confidence that a good deal of hardship resulted in the industry. The most recent example of this occurred during the winter of 1924-1925, following the occurrence of typhoid fever in New York City, Washington, Chicago and other cities, ascribed by the health authorities to contaminated shellfish.[17] As a result of the conditions arising because of this, the Surgeon General of the U. S. Public Health Service was asked to call a conference in Washington of representatives of the shellfish industry, of the health authorities and various state and federal officials interested in preventing a recurrence of the situation then existing. At this conference, a committee was appointed to formulate recommendations for the sanitary control of the shellfish industry. The work of the committee was divided among subcommittees to consider the various phases of the

problems before it. These sub-committees reported back to the main committee, and a preliminary report was submitted in the fall of 1925.[18] This report was practically made the basis of the Public Health Service policy with respect to the shellfish industry.

Following the recommendations of this committee, the various State agencies have established control over the industry within their respective jurisdictions. They issue certifications to various shippers of shellfish who meet the requirements with respect to the areas from which shellfish are taken and with respect to the methods of handling and packing shellfish products.

These certificates are then submitted to the Public Health Service representative in the district in which the State is located, and if approved, the name of the shipper is included in a list which is sent to the various health authorities throughout the United States and to the Ministry of Health of Canada for their information.

The shellfish shipper ships his product to market in containers labeled with a number assigned him by the State authorities. In this way health anthorities in shellfish consuming states can readily ascertain whether or not shellfish reaching their markets come from shippers certified by their state authorities and approved by the Public Health Service. There is brought about in this way a uniformity of procedure throughout the industry in that the same requirements are exacted everywhere.

The fundamental scientific principles enunciated in the Advisory Committee's Report determine largely the policies adopted by the States and approved by the Public Health Service with reference to the shellfish industry. Before the engineer in charge of the shellfish district in which the State is located recommends Public Health Service approval of a particular State certification submitted to him by the proper State authorities, he assures himself of the adequacy and efficiency of the State machinery which issues the certification. If, in his opinion, State supervision is adequate and efficient, and, if from personal knowledge gathered at first hand in the field, he feels that the certification should be listed among those approved by the Public Health Service, recommendation is made to that effect.

Twice a month the Public Health Service issues a list of shippers whose certifications have been approved. This list is sent to State and municipal health authorities in the United States, and to Canadian health officials.

As long as a reasonable amount of care is exercised, first by the State authorities in issuing the certification, and, second, by the Public Health Service representative in recommending approval of State certifications, and, third, by the State or local health authorities in excluding from their respective markets shellfish shipped by uncertified shippers, a repetition of oyster-borne typhoid fever infection on as extensive scales as occurred in the past should not occur.

This new responsibility, namely, that of preventing an unsafe food product in the form of shellfish from reaching the consumer, is thus added to the numerous other activities of health officials. A very large proportion of this responsibility rests upon the city health officer, for unless uncertified shellfish are excluded from his city markets, the whole protection it was intended to place around the shellfish consumer is swept away.

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The R. I. Medico-Legal Society—Last Thursday—January, April, June and October. Dr. Creighton W. Skelton, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

EDITORIALS

OF DOGS

Now very much in evidence. Every little while the rabies scare turns up, and when it has passed, one seeks to learn how many cases of real rabies there were, how many children were bitten, how many of them contracted disease, how many dogs were bitten, etc., etc. It is very difficult, indeed, to learn these facts, even by an interested and studious reader. It is brought to light, however, that there is a very varied attitude of people toward dogs, and that many people are more favorable toward dogs than they are toward their fellow men and the health officers. There seems to be substantial propaganda to glorify the canine species, and much that is misleading and untrue is constantly being published in the lay press. That barking dogs are a nuisance to nervous people cannot be disputed, nor can it be gainsaid that any imputation as to the desirability of aforesaid pups is resented by any complainant. The laws regarding dogs are not enforced by those whose duty requires it. Sleep is as necessary to health as is food, and we note with interest and pleasure that

there is a rapidly growing movement for less noise in large cities. But one thing that has never been properly advertised is that nearly all dogs are filthy in their habits, eat manure and offal, etc., etc. Yet it has been urged that it is a good thing to have pet animals for children. If this is in order to teach children to be kind to animals, then we must say that there is something wrong with our domestic pedagogy. It has never been proven that any of the infectious diseases of children are due to animal osculations, but it is not unreasonable, and we venture to predict that the time may come when we shall acknowledge that we were wrong, and that, even rabies aside, dilutions of polymorphous filth are not suitable for infantile consumption.

A REAL NEED

From whatever angle one wishes to attack the treatment of mild or incipient mental disorders, it is obvious that there should be a place to do it. Most of such conditions do not appear with a sudden onset; they come insidiously and tediously, and much time and study are required for both diagnosis and treatment. At present in Rhode Island there is no place to treat and study the incipient psychoses. The hospital for mental diseases provided by the State is not a proper place to which to commit an anxiety neurosis. In the first place, a commitment is not necessary, and further, there is still the stigma attached to the place where many people who have been touched by the moon are kept for restraint. A greater group, who is not in the least provided for, is composed of the younger patients who are still in their minority, the most hopeful class of cases for treatment by far.

Various suggestions have been made from time to time, and it is hoped that the City of Providence may attack the problem. If this is the case, the other portions of the State should be able to avail themselves of the opportunity thus provided, for such a hospital would undoubtedly attract an excellent staff, and to a psychopathic hospital the staff and social service department are the all-important features. Outlying districts are already being well supplied with hospitals for surgical and maternity needs, but the more special needs of the relatively few psychopathic cases would never be filled except by men and hospitals who are found only in large communities as a rule. It is doubtful if the State should handle such an institution, for it is a very poor father to an inquisitive child, and research is an important need in such work.

The plight today of the eighteen-year old who feels a marked sense of inferiority, and feels it so keenly as to wish to escape life, is indeed a sad one in Rhode Island, if the family income is small or even average. If Providence provides such hospital need in the way which has been proposed, it will be well done, and the State might well make some appropriation whereby townships could be aided in part to defray the expense of having these special cases treated by the city.

The need is great and unquestioned, and it should behoove the medical profession to urge in all ways the erection of such a hospital.

MEDICAL AND SURGICAL FEES

There has been from the public of late a good deal of complaint regarding the cost incurred from illness. Doctor William W. Keene's answer to the article published in the *Atlantic Monthly* entitled, "The High Cost of Being Sick," is a most able presentation of the medical man's situation, and shows clearly the vast amount of charity done by all surgeons and physicians.

One of the first causes of complaint from the layman seems to be against the system of charging for major surgical operations one-tenth of the earnings of the year, and the question has been asked whether a surgeon would charge one-tenth of a million dollars for a surgical operation, if that large sum happened to be the individual's income for the year. This would seem a very proper question, and might properly bring up anew the whole question of medical and surgical fees. With the increase in fortunes in America, we are facing a changing economic situation, and, therefore, it might seem well from time to time for the medical associations to review the matter of fees. There have been many cases recently in which the patient has protested the surgeon's bill, and I know of at least two cases in which, when a surgical bill representing one-tenth of the pa-

tient's income for the year was presented, it was protested, and one-half the sum asked was finally paid. This certainly does not seem a dignified procedure. Could not a new schedule, with minimum and maximum fees for operations, be decided upon, and a maximum per hour charge for other medical services be determined? Of course, the argument can be advanced that if individuals do not want to pay large fees they need not go to the surgeons whose practice it is to charge fees based upon one-tenth of the income, but certain people will always go to the surgeon with the greatest reputation, and certainly those surgeons do not want to bring the rest of the profession into the position of being considered members of a profession exorbitant in its charges. Perhaps the one-tenth of the income basis of charge for major operations is a right and proper one. If it is, this should be established in the medical councils and be firmly adhered to when an issue is made, thus avoiding the result of cutting a fee in half. Have our medical councils recently agreed upon maximum and minimum charges? If they have not so done recently, it would seem the policy of wisdom to do so.

SOCIETIES

The Rhode Island Medical Society

The regular quarterly meeting of the Rhode Island Medical Society was held in the Medical Library, March 1, 1928, with the president, Dr. Norman M. MacLeod, presiding. After the reading of the minutes of the December meeting by the secretary, the president made the following appointments:

Delegates to the Maine Medical Society: Dr. Guy W. Wells, Dr. Henry L. Johnson.

Delegates to the New Hampshire Medical Society: Dr. F. N. Brown, Dr. T. J. McLaughlin.

Delegates to the Vermont Medical Society: Dr. Joseph Hawkins, Dr. J. E. Donley.

Delegates to the Massachusetts Medical Society: Dr. Roland Hammond, Dr. Lucius Kingman.

Delegates to Connecticut Medical Society: Dr. A. C. Sanford, Dr. E. V. Murphy.

Member at Large of the R. I. Medical Library Bldg. Board of Trustees: Dr. H. A. Manchester.

Anniversary Chairman: Dr. E. V. Murphy.

The president announced the death of Dr. A. A. Mann, Central Falls, R. I., who served the R. I. Medical Society as president in the years 1910-11, and referred the matter to the Committee on Necrology.

The following program was presented:

1. "The Doctor Decides." Moving pictures through the courtesy of the R. I. Tuberculosis Association and the State Board of Health.

Dr. H. L. Barnes, of Wallum Lake, R. I., spoke about the importance of early diagnosis, and stressed examination of the whole family where one member has shown evidence of tuberculosis. He also stressed the value of X-Ray in diagnosis of chest tuberculosis. On motion of Dr. Barnes, duly seconded, the following Resolution was adopted and referred to the House of Delegates:

"Realizing that many cases of incipient tuberculosis could be saved if physicians were consulted in the early stages instead of the advanced, the Rhode Island Medical Society hereby approves and endorses the efforts of the Rhode Island Tuberculosis Association to awaken the public to the dangers of the delay in establishing a diagnosis of the disease.

2. "Surgery in Diabetics." This paper was read by Dr. Alex. M. Burgess.

3. "The Role of the Naval Medical Service in the Construction of the Panama Canal." Capt. Wm. H. Bell (M.C.), U. S. N., Commanding Officer of U. S. Naval Hospital, Newport, R. I.

Collation.
Adjourned.

J. W. Leech, M.D.
Secretary

HOSPITALS

The Memorial Hospital

The following is a copy of the minutes of the Memorial Hospital Staff meeting held March 1, 1928:

Meeting called to order by President Wheaton at 8:45 P. M.

Records of previous meeting read and approved.

Records were approved, having been gone over at a previous meeting of the Executive Committee of the Staff.

No other routine business transacted.

Dr. Joseph F. Hawkins gave a very interesting "Travel Talk" with illustrations.

Dr. Hawkins was thanked by President Wheaton on behalf of the staff for his very interesting talk.

Collation served and meeting adjourned.

JOHN F. KENNEY, M.D.
Secretary, Memorial Hospital Staff

ANNOUNCEMENTS

The 13th Annual Convention of the Catholic Hospital Association of the United States and Canada and the Second Annual Hospital Clinical Congress of North America will be held in the Cincinnati Music Hall, Cincinnati, Ohio, June 18th to 22nd, inclusive, 1928. The Fourth Annual Convention of the International Guild of Nurses will be held at the same time, in the same building, at night meetings.

This Convention and Congress will be one of the largest and most important hospital meetings of the year, and will comprise general scientific meetings, special clinics or demonstrations of hospital departments, and three hundred special commercial and educational exhibits. Outstanding authorities in medicine, surgery, pathology, nursing, dietetics and hospital administration, architecture and engineering will lecture and demonstrate in specially planned clinics representing the various departments of the modern hospital. A professional program of the highest interest and value is now being formulated, and all persons interested in medical and hospital service are cordially invited to attend. Further information may be obtained from John R. Hughes, M.D., Dean of the College of Hospital Administration, Marquette University, Milwaukee, Wisconsin, who is General Chairman of the Convention and Congress.

AMERICAN COMMITTEE
for attendance at the
FIRST INTERNATIONAL OTO-RHINO LARYNGOLOGICAL CONGRESS
Sailing from New York, July 6th, 1928
25 Broadway, New York

COMMITTEE

Dr. Thomas J. Harris, New York
Dr. Robert L. Loughran, New York
Dr. George M. Coates, Philadelphia
Dr. Henry B. Orton, Newark, N. J.
Dr. W. P. Wherry, Omaha, Neb.
Major C. P. Mills, New York
Mr. P. G. B. Morriss

N-E-W-S

Eye, ear, nose and throat doctors of the world will meet for the first time at the First International Congress of the Oto-Rhino-Laryngological Society, to be held in Copenhagen, Denmark, July 29 to August 1. That was the announcement made today by the American Committee of the Society, 25 Broadway, New York.

More than seventy-five specialists will represent the United States at the Congress. These doctors will also spend some time visiting at various large cities in France, England, Germany, Norway and Sweden. Clinical discussions will be held in these countries with European doctors presiding.

The Congress will concern itself with questions relating to the treatment of the many maladies, injuries and infections of the eye, ear, nose and throat. It has been reported from abroad that very successful methods have been found for sinus trouble and middle ear deafness.

BOOK REVIEWS

DISEASES OF THE MOUTH

BY STERLING V. MEAD, D.D.S.
C. V. Mosby Co., Publishers.

This is written by a dentist and should make an excellent reference book for dentists. The first third deals with the pathology of the teeth and the

rest of the book takes up all other diseased conditions in the mouth and even in the adjacent areas; for instance, diseases of the tonsil and pharynx, infections and tumors of the sinuses and parotid gland are dealt with. As practically every disease of the human body has mouth manifestations it can be seen that this is a comprehensive treatise. And in a book of less than 600 pages with large type and wide margins it follows that most subjects have to be treated in a superficial, sketchy manner. But with these limitations it is an excellent book. It is well arranged and well indexed. Any given matter is easily run down and there is a concise straight-forward, if limited, statement of the subject. At the end of each chapter is a lengthy bibliography. The outstanding feature of the book is its illustrations and plates, over 300 in number and beautifully reproduced on the heavy glazed paper of which the book is formed. A large part of these are reproductions of X-rays and contrary to rule these are as clear as and with the fine detail of the films themselves.

INTERNATIONAL CLINICS
(Pocket Formulary)
Volume II, 37th Series
By George E. Rehberger, M. D.
J. B. Lippincott Co., Publishers.

An interesting and suggestive volume far removed from the text book type which latter after all is what most of us need and to which we necessarily have to devote most of our reading time. Full of piquant and tasty tidbits for between meals snacks but very unsatisfactory for a square meal.

There are several excellent papers by men of standing, some well worked up clinics by other eminent men, an off-hand haphazard talk by a surgeon certainly very well known and some elaborately prepared and illustrated articles by men whose theories are certainly not yet accepted by recognized authorities. Then there are travel clinics giving an impressionistic view of what is going on in European Medical centres.

Medical questionnaires from the National Board of Medical Examiners serve as a variant of the recently popular ask-me-another games and would probably be chastening to the spirits of all of us five years out of school. President Coolidge's excellent address at the Washington Convention is given in full.

An excellent publication for the man who is travelling in too dull a manner along his own narrow rut of medical life.

Diseases of Skin (*Third Edition*) by Henry H. Hazen, A.M., M.D., Prof. of Dermatology at Georgetown University. Published by The C. V. Mosby Co., St. Louis, Mo. 572 pages.

The present edition has several changes. There is a better classification of diseases and in omitting any reference to eczema it shows the trend of dermatologists of today, for this hapless word has been, in the past, a cover under which many heretofore obscure conditions were hidden. Dr. Hazen has emphasized this in several places in his book and under the caption "Anaphylactic Dermatitis" he is pointing the way toward a better nomenclature.

His use of X-ray, radium, fulguration and the Alpine lamp has been brought up to date. His treatment of the histopathology of the skin diseases is very good for a book of this size. The illustrations are excellent.

His chapter on hygiene is very commendable for many larger works fail to mention this very important subject.

The book is of a convenient size, excellent for the student and general practitioner. It is written clearly and to the point.

MISCELLANEOUS

CONJUGAL TUBERCULOSIS

Arnold Minnig, Denver (*Journal A. M. A.*, Nov. 19, 1927), has reviewed 6,000 dispensary cases with reference to the incidence of tuberculosis in husband and wife. There were 1,888 married or widowed patients. Among these, there were 319 cases, or 16.8 per cent, in which both consorts had active tuberculosis or one or the other died of the disease. Of the 319 patients, 104 were widowed on account of phthisis. Of the 104, or 48 per cent, who were so widowed, fifty consorts had developed active tuberculosis. Of

this 319, 181 were female and 138 male. The reason for the predominant number of females being infected may be explained by the fact that the wife is usually the nurse when the husband becomes ill. In other words, when there was a massive infection as occurs when one of the consorts died, one out of two developed the disease. These observations show something definite; viz., in a large number of cases adult infection is present and a danger. While not every adult who is exposed to tuberculosis is going to be infected, yet if he or she is below par, and the consort has open tuberculosis, there is one chance in six that the other is going to become infected. Also if the culture medium is good and the infection is especially massive, as in the case of a dying consort, the chances are one in two that the other will become infected. It was rather striking that of these 319 patients with conjugal tuberculosis only eleven were born in Colorado, and of these only five died of the disease, a forcible argument in favor of climate. Another aspect was whether, when the woman developed tuberculosis, the man remained faithful to his wife, and when the man developed tuberculosis, whether the wife remained faithful to the husband. In the greater number of cases the man was more faithful to his wife than the wife was faithful to the husband. Hygienic living and intelligent prophylaxis have a marked and evident beneficial effect. Tuberculosis in the mother is the most dangerous contact, and is the more frequent in marital tuberculosis. Whether one believes in exogenous or endogenous infection or both, proper prophylactic precautions must be observed. That each bacillus is to be feared is uncalled for because of the very strong natural immunity existing in man. Minnig feels now that sufficient data are at hand, that it is possible to announce that there is adult infection and that this conclusion should be propagated in an intelligent way through social agencies, the press, and the physician.

CONSTIPATION

Russell S. Boles, Philadelphia (*Journal A. M. A.*, Nov. 19, 1927), emphasizes what appears to him must eventually become the modern conception of constipation; namely, that the usual type (excluding mechanical and organic types) encountered today, in city life particularly, is a functional nervous disorder. While an improper diet, consisting of foods too greatly refined and containing too few vitamins, sedentary habits and other current explanations of the condition are important, the fundamental idea always to be borne in mind is that constipation manifests itself only in a soil which has been prepared through the agency of an unstable nervous system. This may be congenital or it may be acquired through the unceasing combat with the demands of modern civilization. Treatment can never be routine. Individualization is imperative. The management of constipation must begin with its prevention, and this must start in infancy. Infants should be held in a squatting position with the thighs flexed on the abdomen. Children should not be compelled to sit with dangling feet on high toilets; a stool should be placed under their feet. This simple procedure is also helpful to adults with weak abdominal muscles. The establishment of a regular time for defecation (after each meal, or at least after breakfast) and strict adherence to the schedule are essential. The act should never be hurried, and the mind should not be unduly concentrated on it. As regards diet, the food must be sufficient in quantity, and must be ingested at regular hours. The teeth should be in good condition in order to masticate it properly, but it should not be fletcherized. The character of the diet must always be modified to suit the individual; what is good for the lean is not good for the obese; what benefits the atonic type may harm the spastic type. The presence of an associated disease, such as diabetes or ulcer, obviously calls for a modification in the character, variety and preparation of food. Generally speaking, a proper selection of food should be made from all the fruits and green (above ground) vegetables, since these are rich in cellulose and contain the necessary salts, vitamins and organic acids. In spastic constipation many of these foods are not permitted because of their high cellulose content. For the same reason bran may be harmful. For such patients the underground vegetables and starchy foods, such as potatoes, rice, macaroni, strained cereals, and white bread instead of whole wheat bread, with the avoidance of skins, seeds, etc., are desirable, but for a short time only. Later, stewed fruits and well cooked green vegetables may be allowed. While a certain amount of meat is advisable, it

should always be taken in moderation. Although the vegetable proteins are perhaps not so quickly assimilated as those of animal origin, they nevertheless meet the requirements for good health. A sufficient amount of water is always required—hot water, especially on rising, for the spastic patient, cold for the atonic. Various hydrotherapeutic measures, such as hot baths and hot applications, preferably in the form of abdominal packs, aid in relieving spasm. For emaciated and visceroptotic patients a well fitted abdominal pad is helpful. In all cases a moderate amount of exercise, particularly of the abdominal muscles, is required. In addition to active exercise, abdominal massage and electricity are indicated. In the spastic type light massage and the galvanic current are helpful, while in atonic cases vigorous massage and an interrupted sinusoidal current may be employed. Deep breathing exercises are always beneficial. Enemas are useful in cases of rectal constipation (dyschezia). Transduodenal lavage and colonic irrigations, when properly administered, are temporarily advantageous especially when there is an intensive toxemia. In the spastic types the temperature of the solution should be about 100 to 104 F., in atonic cases about 90 F. Drugs are rarely indicated, except in cases of acute illness or when the constipation is the result of such conditions as senility, anemia, cancer, diabetes, kidney disease or insanity. It is inadvisable to prescribe cathartics as a routine; if they must be used, they should be selected with extreme nicety to fit the individual case. Cascara is suitable for aged men and pregnant women. Saline are not appropriate for dyschezia. Liquid petrolatum, agar-agar and psyllium seeds will not harm any one, and are often distinctly beneficial. Toxin-absorbing agents as koalin, and the various toxin-preventive substances, such as lactose and lactose-dextrin are decidedly worthy of trial. In spastic cases sedatives (bromides, atropine, belladonna, hydrastis, etc.) are distinctly helpful. In atonic cases and in those with nervous depression, strychnine, which is supposed to stimulate Auerbach's plexus, and other tonics are indicated. Thyroad and ovarian substances are helpful in suitable cases. Psychotherapy has served as a most important means of approach in correcting nonorganic constipation.

FEE-SPLITTING QUACKERY

"Radithor" is one of the numerous pieces of quackery in the field of radioactivity. It is exploited by the Bailey Radium Laboratories of East Orange, N. J., the moving spirit of which is one William J. A. Bailey, whose past record with "patent medicine" concerns and a fake engineering corporation was dealt with in THE JOURNAL, January 29. The Radithor quackery consists of thirty half ounce bottles of distilled water which is alleged to be radioactive. No less than thirty bottles can be purchased; and the price is $30. That is, the price to the sucker who happens to be a layman is $30; to the easy mark who can write M.D. after his name, it is $25. There are two order forms, one, the "Standard Order Form" that the layman fills out; the other, the "Special Order Form for Doctors' Use Only." This form states that "when patient buys direct, we allow doctor a $5 credit on all orders." The physician who would order Radithor must be weak not only in medicine but also in morals.—*Jour. A. M. A.*

PULMONARY EMBOLISM FOLLOWING OXYGEN INJECTION OF KNEE

Samuel Kleinberg, New York (*Journal A.M.A.*, July 16, 1927), cites a case of pneumarthrosis, in which pulmonary embolism and cardio-vascular failure immediately followed the accidental injection of oxygen into the circulation. The heart stopped beating first, followed in about five minutes by the cessation of respiration. Artificial respiration was instituted, but for about ten minutes the patient was apparently dead. An injection of epinephrine hydrochloride into the heart revived the patient and prevented what appeared a certain catastrophe. The accident was the result of faulty technic, which is acknowledged in detail, so that it may never happen again. The author in making this report hopes that it will not deter others from using pneumarthrosis, which is an invaluable diagnostic test in doubtful and properly selected cases.